UNITED NATIONS

Framework Convention on Climate Change

Distr.
GENERAL

FCCC/SBSTA/1998/INF.5
11 May 1998

ENGLISH ONLY

SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE
Eighth session
Bonn, 2-12 June 1998
Item 7 (a) of the provisional agenda

DEVELOPMENT AND TRANSFER OF TECHNOLOGIES

TECHNOLOGY AND TECHNOLOGY INFORMATION NEEDS ARISING FROM THE SURVEY OF DEVELOPING COUNTRY PARTIES

Note by the secretariat

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I. INTRODUCTION

A. Mandate

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its second session, requested the secretariat to conduct a survey in order to identify the needs of non-Annex I Parties for information on technologies and know-how to mitigate and adapt to climate change (FCCC/SBSTA/1996/8). At its fifth session, the SBSTA requested the secretariat to expand the survey to all non-Annex II Parties (FCCC/SBSTA/1997/4).

B. Scope of the note

2. The secretariat reported the results of the initial survey on technology and technology information needs at the fifth session of the SBSTA (FCCC/SB/1997/1).[1] Submissions from three Parties were also received on this matter and included in documents FCCC/SBSTA/1997/MISC.1 and Add.1.

3. Taking into consideration the guidance provided by the SBSTA at its fifth session, the secretariat expanded the initial survey of technology and technology information needs of non-Annex I Parties to the Convention to all non-Annex II Parties. This was done with the cooperation of the University of Amsterdam (IVAM Environmental Research).[2]

4. This document is a synthesis report of responses received on the expanded technology and technology information needs survey. It provides information on the number and origin of the responses, the structure and contents of the questionnaire utilized for the survey and the main findings. Since the findings identify technology information needs, they may help to define what should be addressed by an international technology information centre(s) (see FCCC/SBSTA/1998/INF.2).

5. For more detailed information, Parties may wish to refer to a report[3] prepared by the University of Amsterdam which will be made available at the eighth session of the SBSTA.

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[1] See also the complete report: R. van Berkel and A. van Roekel, Pilot Information Needs Survey Regarding Climate Relevant Technologies, Publikatiereeks Milieustrategie 1997/3, Ministry of Housing, Spatial Planning and the Environment, The Hague, the Netherlands.

[2] This activity was supported by the Government of the Netherlands.

[3] R. van Berkel and E. Arkesteijn, Transfer of Environmentally Sound Technologies and Practices under the Climate Convention: survey of experiences, needs and opportunities among non-Annex II countries, IVAM Environmental Research, University of Amsterdam, 1998.

C. Possible actions by the SBSTA

6. After reviewing the results of the technology needs survey, the SBSTA may wish to provide guidance on the following:

(a) What process should be used in future to further identify technology and technology information needs? For example, could this be a part of national communications from non-Annex I Parties? If so, should the guidelines for the preparation of non-Annex I national communications be modified and, if so, how?

(b) What should be the next steps to identify specific technology and technology information needs? For example, should sectorial analyses be undertaken by governments to identify specific needs and barriers?

(c) How can the capacity of developing countries be augmented to enable them to undertake further analyses on technology needs and existing barriers?

(d) In the case of countries that have identified specific sectoral technology needs, what approach should be considered?

(e) What role could multilateral lending institutions, bilateral programmes and the private sector play in the technology needs assessment process?

II. SURVEY OF CLIMATE-RELEVANT TECHNOLOGY AND TECHNOLOGY INFORMATION NEEDS

A. Background

7. The expanded survey was sent to the national focal points for climate change[4] of all non-Annex II Parties in mid-October 1997. A letter was sent in February 1998 extending the deadline for responses. Additionally, the survey was actually distributed to some 120 key decision makers in 13 countries (Barbados, Benin, Bhutan, Bolivia, Costa Rica, Egypt, The Gambia, Georgia, Latvia, Mali, Panama, Poland and Uruguay).

8. As of 1 April 1998, 78 organizations had responded, representing 61 countries. The geographical coverage of the responses is shown in the following table.

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[4] For those Parties that have not yet identified national focal points, the questionnaire was sent to the diplomatic missions in Bonn and to the permanent missions in New York or the ministries of foreign affairs, as appropriate, of those Parties not represented in Bonn or to other focal points suggested by the diplomatic missions.

Table. **Geographical coverage of the responses in the survey of climate-relevant technology and technology information needs.**

Total countries: 61 responses: 78	Responding Parties (1997/1998)	Response in initial survey (1996/1997)
Central & Eastern Europe countries: 12 responses: 14	Albania, Bulgaria(*), Croatia, Georgia, Hungary, Lithuania, Latvia, Moldova, Poland (2), Romania, Russian Federation, Slovenia	Bulgaria, Latvia[1]
Asia countries: 15 responses: 17	Bahrain, Bhutan (3), Cambodia, China, Indonesia, Korea, Lebanon, Myanmar, Oman, Philippines, Singapore, Syria, Yemen	Bangladesh, Malaysia
Africa countries: 17 responses: 24	Benin (2), Ethiopia, Egypt(*), The Gambia, Guinea, Guinea-Bissau, Lesotho, Mali (5), Niger, Nigeria, Senegal, South Africa (2), Swaziland, Togo, Tunisia, Zimbabwe	Botswana, Egypt, Zimbabwe[1]
Latin America countries : 11 responses: 16	Belize, Bolivia (2), Costa Rica (3), Ecuador, El Salvador, Guyana, Mexico, Panama, Peru, Uruguay (3)	Costa Rica,[1] Venezuela
Small Island States countries: 6 responses: 7	Antigua and Barbuda, Barbados (2), Jamaica, Kiribati, Trinidad and Tobago	Samoa

(*) Response received from a non-governmental stakeholder
[1] Parties that participated with an up-dated response

B. Survey

9. The survey was conducted by mail. The questionnaire consisted of 16 questions divided in two parts (seven questions in the first part and nine in the second). The first part aimed to solicit information on the activities undertaken in the countries with regard to the transfer of technology and know-how conducive to mitigating emissions of greenhouse gases and to adapting to climate change. In addition, it served to identify key decision makers within the countries *vis-à-vis* the selection and implementation of environmentally sound technologies and the implementation of enabling measures. The second part of the survey contained specific questions regarding past experiences with climate-relevant technology transfer in the countries, terms and conditions for technology transfer, most appropriate information sources and formats, and available funding mechanisms. An abridged version of the specific questions of the survey is given in the annex below.

C. Main findings of the expanded survey

10. The survey has been analysed by the University of Amsterdam. The detailed results are provided in their report along with a fact sheet on each responding country. The information contained in the country fact sheets provides examples of past experiences and priority needs. Parties may wish to review the fact sheets as they contain detailed data. In general the results suggested that:

(a) The ability of Parties to respond to the survey varies considerably among non-Annex II Parties. A few Parties provided very detailed responses, but many others have not assessed their specific technology needs and could only respond in a more general way;

(b) Only the most important sectors and commonly perceived technological problems in these sectors have been addressed. For many non-Annex II Parties environmentally sound technology needs and opportunities still have to be assessed in detail;

(c) There are only small differences between regions in terms of importance of various sectors for emission mitigation, for sink enhancement and for adaptation. The only significant differences recorded are with regard to the importance of agriculture and forestry for emission mitigation, and to forestry and infrastructure for adaptation;

(d) Decision makers on environmentally sound technologies in non-Annex II countries operate with limited information, and hence appreciate all sources of information. In terms of information content, the responses indicate a need for more information on financing opportunities, and a certain reluctance to consider information from vendors and suppliers;

(e) Most respondents indicate that funding for the transfer of environmentally sound technologies should come from international sources and on preferential terms;

(f) The survey was an initial step. In most cases, it needs to be supplemented with analysis of specific projects to set the stage for the transfer of technology.

11. On the basis of the draft survey report, the main findings are summarized below.

1. Technology needs

12. The main conclusions are as follows:

(a) *Mitigation of anthropogenic emissions of greenhouse gases*: For energy supply, energy demand and transportation are the most important sectors for emission mitigation for the vast majority of countries (between 84 and 90 per cent), with other mitigation-related sectors (forestry, agriculture, industry and waste management) considered important for slightly fewer countries (between 69 and 74 per cent). Planning and priority setting for the transfer of

environmentally sound technologies is being undertaken on a wide scale only among non-Annex II countries for the first three sectors;

(b) *Enhancement of capture of greenhouse gases in sinks*: Forestry and agriculture are considered important sectors for sink enhancement by the majority of responding countries (88 and 71 per cent respectively). Some countries highlighted the importance of grasslands and other sinks for CO_2;

(c) *Adaptation to climate change*: Agriculture is by far the most often listed adaptation sector (85 per cent), followed by forestry and coastal zone management (68 and 66 per cent respectively). Other sectors (health, infrastructure and fisheries) are considered important for adaptation by 50 to 60 per cent of the responses. The protection of low-lying coastal areas is a common concern.

2. Technology information needs

13. The main conclusions are as follows:

(a) *Information types*: At least 50 per cent of the respondents rate information on the following as highly relevant: inventory of technology options, comparative assessment of alternative technologies, inventory of policy options, inventory of vendors and suppliers, and inventory of financial institutions and their products. The last category is rated highly relevant by the largest share of respondents (78 per cent), whereas inventories of vendors and suppliers and/or other experts for the implementation of specific categories of environmentally sound technologies and practices, are rated highly relevant by 50 per cent of the respondents;

(b) *Information sources*: The largest share of the respondents consult two information sources (national sector experts and national environmental experts) on a 'regular' basis, whereas all other information sources (academia, technology suppliers, international sector experts, international environmental experts, international organizations and public interest groups) are consulted on an 'occasional' basis;

(c) *Technology information centres*: The questionnaire requested information on national technology information centres that could play a key role in the dissemination of information on environmentally sound technologies and practices. The respondents identified 127 national technology information centres. A number of respondents (40 per cent) did not report the existence of such centres;

(d) *Information formats*: Three types of information formats were suggested in the questionnaire: written (scientific reports, commercial brochures, and journals and periodicals), oral (international congresses, training workshops, national consultants, and international consultants), and electronic (Internet, CD ROM, and electronic databases). The first two formats are generally available in at least 80 per cent of the respondents' countries and the third is available in a slightly lower percentage. Five types of information are considered the most important by the respondents, namely, scientific reports, journals and periodicals, training

workshops, national consultants and international consultants. Most of the respondents indicated that Internet, scientific reports, journals and periodicals, training workshops and national consultants are utilized on a regular basis.

3. Technology selection and financing

14. The main conclusions are as follows:

(a) *Technology selection criteria:* Five categories were suggested as potentially important in the selection of environmentally sound technologies: financial (availability of low-interest loans, multilateral aid, commercial credit, and grants), economic (investment cost and profitability of technologies considered), technical (reliability, ease of operation, and maintenance and service infrastructure for technologies considered), social (acceptability, contribution to poverty alleviation and impact on gender relations of technologies considered), and environmental (reducing emission levels, enhancing capture of greenhouse gases in sinks, contribution to solving present environmental problems and possible environmental tradeoffs). The criteria in order of decreasing importance are: technical, economic, environmental, social and financial. The 'acceptability of technologies for potential users' and the 'reliability of technology' are particularly important subcategories (87 per cent and 84 per cent respectively), while 'availability of commercial credit' and 'impact on gender relations' are regarded as non-relevant subcategories (75 per cent and 70 per cent respectively);

(b) *Sources of finance:* Three different sources of capital for financing the transfer of environmentally sound technologies were identified, namely, national (commercial credit providers, investment companies, leasing companies, soft loans/development banks and government funds), bilateral (bilateral aid organizations, foreign direct investment, commercial credit providers, and export subsidies) and multilateral (soft loans/development banks, commercial credit providers, and international grants). Of these, national soft loans/development banks, bilateral aid organizations, foreign direct investment (bilateral) and international grants (multilateral) were considered the most important. However, respondents indicated that financing from government funds (national), bilateral aid organizations, soft loans/development banks (multilateral) and international grants (multilateral) was most readily available. The respondents rate the financial providers in the following order of decreasing importance: multilateral, bilateral and national. Respondents from 20 countries refer to a total of 15 institutions offering aid, grants and subsidies, among these, the GEF is one of the most often-cited examples of a finance provider;

(c) *Terms and conditions for financing:* Most of the respondents (88 per cent), indicated aid, grants and subsidies as the most important means of financing environmentally sound technology transfer projects. Three other financing mechanisms are considered as important by at least 25 per cent of the respondents (loans at below market conditions, joint ventures and fiscal benefits).

Annex

Questions included in the questionnaire of the expanded survey on technology and technology information needs

Part I: Present status of the national planning process regarding priority mitigation and adaptation technology needs and opportunities

1) Please identify your organization and contact addresses.

2) Which sectors are important to your country for mitigating anthropogenic emissions of greenhouse gases?

3) Which sectors are important to your country for enhancing the capture of greenhouse gases in sinks?

4) Which sectors are important to your country for adapting to climate change?

5) Has your country set priorities for climate-relevant technology[5] transfer in the various sectors? If so, could you summarize the important priority mitigation and adaptation technologies by sector for your country?

6) In case your country has set priorities for one or more sectors, could you summarize key features of the planning and priority-setting processes that led to these priorities?

7) Could you please name the key organizations in your country which you consider the most important in policy-making for adoption of climate-relevant technologies and/or for the selection and implementation of climate-relevant technologies? Please include as many key decision makers as you consider relevant, and list the contacts by various sectors, including energy, agriculture, transportation, forestry, industry, waste management, health, infrastructure and fishery sectors.

Part II: Past experience in obtaining information on climate relevant technologies and in implementation of climate-relevant technology transfer projects

8) Could you rate the importance of different types of information for meeting the technology information needs in the different sectors relevant for mitigation of emissions of greenhouse gases and adaptation to climate change?

9) What information sources does your organization consult in the preparation of climate-relevant technology transfer initiatives?

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[5] In the survey the use of climate-relevant technologies is intended to indicate environmentally sound technologies and practices.

10) Could you please provide a list of centres (with addresses) in your country that collect and disseminate technology-related information on sectors such as energy and transportation?

11) Could you please indicate what information formats are generally available in your country and in your own organization?

12) What are the principal criteria for selecting climate-relevant technologies?

13) What are the most important sources for financing climate-relevant technology transfer in your country?

14) What are the most important means of financing for climate-relevant technology transfer in your country?

15) Please provide us with some details on climate-relevant technology transfer projects that have been implemented in your country in the recent past. This concerns not only projects that have been implemented specifically on the basis of climate concerns, but also those projects that have been undertaken for other prime motives, but which have a major impact on mitigating emissions of greenhouse gases or on adapting to climate change.

16) What has your government done to facilitate the transfer and implementation of climate relevant technologies in different sectors in your country?

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